



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<b>(54) Title:</b> IMAGE DISPLAY BALLOON DEVICE  <div data-bbox="609 1155 990 1522" data-label="Image"> </div> <b>(57) Abstract</b> <p>An image display balloon device is disclosed. The balloon device has a sealed and coated balloon (1). The balloon (1), made of a light material, such as fabric or plastic, is inflated with air or with helium gas. The above balloon (1) has at least one projector case used for seating and protecting a projector (2) therein. The projector case is radially positioned on the balloon (1), with both an image passing hole (5) and a projector insert opening (4) being respectively formed at inside and outside ends of said projector case. A screen (3) is mounted on said balloon (1) at a position diametrically opposite to said projector case. The screen (3) is made of a translucent film capable of preventing an image, projected from the projector (2) and passing through the image passing hole (5), from passing through the screen (3), and displaying the image on the screen (3), thus allowing the image to be viewed outside the balloon (1). Since the balloon (1) rises and floats in the atmosphere regardless of where the balloon (1) is anchored, the balloon device is free from being blocked from view. The balloon device is easily and simply installed and removed, thus being effectively and preferably used in a variety of applications for audiovisual instruction, briefing, advertising of products, and publicity of events or companies.</p>		

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## IMAGE DISPLAY BALLOON DEVICE

## BACKGROUND OF THE INVENTION

## 5       Field of the Invention

10       The present invention relates, in general, to an image display balloon device and, more particularly, to an image display balloon device consisting of a balloon inflated with air or with some lighter-than-air gas and assembled with an image projecting unit, or a projector, thus displaying an image, such as an advertising image projected from the projector, on the balloon, the balloon rising and floating in the atmosphere without being blocked from view regardless of where the balloon is anchored.

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## Description of the Prior Art

20       As well known to those skilled in the art, a projector is an electronic apparatus capable of processing an image signal output from an image signal processing device, such as a computer, VCR, LDP, or TV, and of projecting an image in response to the signal on a screen. Such projectors are effectively and widely used in a variety of applications for audiovisual instruction, briefing, advertising of products, and publicity of events or companies.

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In some projector applications for advertising of

products or publicity of events or companies, it is necessary to provide so extra-large a screen as to be inevitably mounted on an extra-large base wall suitable for safely supporting the screen. Such extra-large base walls may be formed by  
5 sidewalls of a building or a specifically designed structure built on the roof of a building. That is, such an extra-large screen has to be mounted to a sidewall of a building or of a roof structure, while a projector is installed in front or back of the screen. The projector projects an image on the  
10 screen, thus displaying the image on said screen. However, when such an extra-large screen is mounted on a sidewall of a building or a roof structure in an urban area, the screen may be blocked from distant view by buildings positioned around the screen.

15 Another problem of such an extra-large screen resides in that it has a spacial limitation and also forces an owner to pay much money for providing such a large-scaled base wall on which the screen is mounted.

## 20 SUMMARY OF THE INVENTION

Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide an image display  
25 balloon device, which consists of a balloon inflated with air

or with some lighter-than-air gas and assembled with an image projecting unit, or a projector, thus displaying an image, such as an advertising image projected from the projector, on the balloon, the balloon rising and floating in the atmosphere without being blocked from view regardless of where the balloon is anchored.

In order to accomplish the above object, the present invention provides an image display balloon device, comprising: a sealed and coated balloon made of a light material, or fabric or plastic, and inflated with air or with helium gas, the balloon consisting of: a projector case used for seating and protecting a projector therein, the projector case being radially positioned on the balloon, with both an image passing hole and a projector insert opening being respectively formed at inside and outside ends of the projector case; and a screen mounted on the balloon at a position diametrically opposite to the projector case, the screen being made of a translucent film capable of preventing an image, projected from the projector and passing through the image passing hole, from passing through the screen, and displaying the image on the screen, thus allowing the image to be viewed outside the balloon.

In the preferred embodiment, the screen is made of a film selected from the group consisting of polyethylene, polyvinyl, polyvinyl chloride, polypropylene, and polyurethane films, and

is embossed on an interior surface thereof.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5       The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

10       Fig. 1 is a front sectional view, showing the construction of an image display balloon device in accordance with the primary embodiment of the present invention;

      Fig. 2 is a plan sectional view, showing the construction of an image display balloon device in accordance with the second embodiment of the present invention; and

15       Fig. 3 is a front view, showing the construction of an image display balloon device of this invention in more detail.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

20       Fig. 1 is a front sectional view, showing the construction of an image display balloon device in accordance with the primary embodiment of this invention.

      As shown in the drawing, the image display balloon device according to the primary embodiment of this invention  
25       comprises a sealed and coated balloon 1. The above balloon 1

is made of a light material, such as fabric or plastic, and is inflated with air or with lighter-than-air gas, such as helium gas. The balloon 1 has a projector case used for seating and protecting a projector 2 therein. The above projector case is radially positioned on the balloon 1. In the projector case, both a projector insert opening 4 and an image passing hole 5 are respectively formed at outside and inside ends. A screen 3 is provided on the balloon 1 at a position opposite to the projector case with the center of the screen 3 being diametrically opposite to the projector 2. The above screen 3 is made of a translucent film capable of preventing an image, projected from the projector 2 and passing through the image passing hole 5, from passing through the screen 3, and displaying the image on the screen 3, thus allowing the image to be viewed outside the balloon 1.

The screen 3 is bonded to the balloon 1, thus forming a part of the balloon 1. It is preferable to mount a black color sheet to the interior surface of the balloon 1 at a position except for the screen 3, thus allowing the image on the screen 3 to be clearer and to be free from being seriously affected by external light. A amplification adjustable lens is set in the image passing hole 5 of the projector case.

Therefore, an image, projected from the projector 2, passes through the image passing hole 5 prior to passing through the interior space of the balloon 1. The image is

finally displayed on the screen 3 positioned opposite to the projector 2.

Fig. 2 is a plan sectional view, showing the construction of an image display balloon device in accordance with the second embodiment of this invention.

In the second embodiment, the general shaft of the balloon device remains the same as that described for the primary embodiment, but three projectors 2 and three screens 3 are provided in the balloon 1 different from the primary embodiment. In such a case, the three projectors 2 and the three screens 3 are alternately arranged on the balloon 1 in a way such that the three projectors 2 are installed in three projector cases regularly spaced out at  $120^\circ$ , with the three screens 3 being positioned between the three projector cases while being also regularly spaced out at  $120^\circ$ . In such an arrangement of the projectors 2, there does not occur any interference during an image displaying operation of the balloon device. That is, an image, projected from each projector 2, is displayed on a screen 3, associated with each projector 2, without interfering with the other projectors 2.

Fig. 3 is a front view, showing the construction of an image display balloon device of this invention in more detail.

As shown in the drawing, in order to produce the balloon 1, a light material raw sheet, such as fabric or plastic sheet, is cut into several pieces having an appropriate shape.



The several pieces are, thereafter, integrated together at the edge into a balloon with a net 11 being integrated along each seam of the balloon 1. The integration of the pieces is preferably accomplished by a welding process using a high-frequency resistance welding machine having a power of not less than 3 kW. In such a case, it is preferable to apply a bonding agent along the edge of the pieces during the high-frequency welding process. In order to allow a user to put up a placard on the balloon device, the balloon 1 preferably has a plurality of placard loops along the net 11 at regular intervals.

Another loop 17 is preferably and exteriorly mounted to each of the top and bottom ends of the balloon 1. The above loops 17 are used for holding the balloon 1 while inflating the balloon 1 with air or with helium gas. The loops 17 may be also used for holding the balloon 1 so as to prevent the balloon 1 from being randomly rotated in the wind when the balloon 1 rises and floats in the atmosphere.

A plurality of tube pockets, individually provided with a fastener 15, such as a zip-fastener, are provide at the lower portion of the balloon 1, with a gas injection tube 16 being positioned in each tube pocket and being protected by each fastener 15. In order to use the balloon device, the fasteners 15 are unfastened prior to taking the gas injection tubes 16 out of the tube pockets. Thereafter, the balloon 1

is fully inflated with pressurized air or helium gas using the gas injection tubes 16. After the balloon 1 is fully inflated with gas, the injection tubes 16 are received into the tube pockets. The tube pockets are, thereafter, fastened by the fasteners 15.

Two guide pipes, or first and second pipes 13 and 14, are provided at the lower portion of the balloon 1. Of the two pipes 13 and 14, the first one 13 is used for injecting pressurized air or helium gas into the balloon 1, while the second one 14 is used for guiding electric cords extending to the projector 2. In the above balloon device, the gas injection tube 16 is specifically used for injecting a large amount of gas into the balloon 1 when the balloon 1 is fully resting on the ground. On the other hand, the first guide pipe 13 is specifically used for injecting gas into the balloon 1, rising and floating in the atmosphere, in order to compensate for leaking gas.

In the balloon device of this invention, the projector 2 is received in a projector case, provided on the balloon 1, prior to be fixed to the case using reinforcing wires 12. In such a case, in order to reduce the weight of the balloon 1 and to reliably protect the projector 2 from external impact, it is preferable to make the projector case using an aluminum alloy having both a desired light weight and a desired strength. On the other hand, the wires 12 have to be set in

the balloon 1 while being balanced. In order to accomplish the above object, the wires 12 are held by a plurality of loops fixed to regular positions on the interior surface of the balloon 1. In the present invention, piano wire is preferably used as the designated wire 12. However, when the projector 1 is light in weight, it is possible to use a fishing line as the designated wire 12.

In the image display balloon device of this invention, the screen 3 may be made of a polyethylene (P.E), polyvinyl (P.V), polyvinyl chloride (P.V.C), polypropylene (P.P), or polyurethane (P.U) film. The above screen 3 is also embossed on an interior surface thereof, thus having a plurality of embossments 3a. The above embossments 3a have a rectangular cross-section, and are preferably and regularly arranged on the screen 3. The embossments 3a of the screen 3 effectively absorb the image, projected from the projector 2, thus preventing the image from being reflected into the interior space of the balloon 1.

A balance weight (not shown) is preferably attached to each joint of the wires 12 inside the balloon 1. The above balance weight is used for compensating for an eccentricity of the gravity center of the balloon device due to the projector 2.

Of course, it should be understood that the balloon 1 may have a variety of configurations, expressing specific

characters, in addition to a simple spherical configuration shown in the accompanying drawings. In addition, the balloon 1 may be decorated with a plurality of decoration bulbs, having a variety of colors.

5           As described above, the present invention provides an image display balloon device. In the balloon device of this invention, a balloon, inflated with air or with some lighter-than-air gas, is assembled with an image projecting unit, such as a projector, thus displaying an image, such as an  
10   advertising image projected from the projector, thereon. Since the balloon rises and floats in the atmosphere regardless of where the balloon is anchored, the balloon device is free from being blocked from view. Another advantage of the balloon device resides in that it is easily  
15   and simply installed and removed. The image display balloon device of this invention may be thus effectively and preferably used in a variety of applications for audiovisual instruction, briefing, advertising of products, and publicity of events or companies.

20           Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the  
25   accompanying claims.

## WHAT IS CLAIMED IS:

## 1. An image display balloon device, comprising:

5 a sealed and coated balloon made of a light material, or fabric or plastic, and inflated with air or with helium gas, said balloon consisting of:

10 a projector case used for seating and protecting a projector therein, said projector case being radially positioned on the balloon, with both an image passing hole and a projector insert opening being respectively formed at inside and outside ends of said projector case; and

15 a screen mounted on said balloon at a position diametrically opposite to said projector case, said screen being made of a translucent film capable of preventing an image, projected from the projector and passing through the image passing hole, from passing through the screen, and displaying the image on the screen, thus allowing the image to be viewed outside the balloon.

20 2. The image display balloon device according to claim 1, wherein said screen is made of a film selected from the group consisting of polyethylene, polyvinyl, polyvinyl chloride, polypropylene, and polyurethane films, and is embossed on an interior surface thereof.

FIG. 1

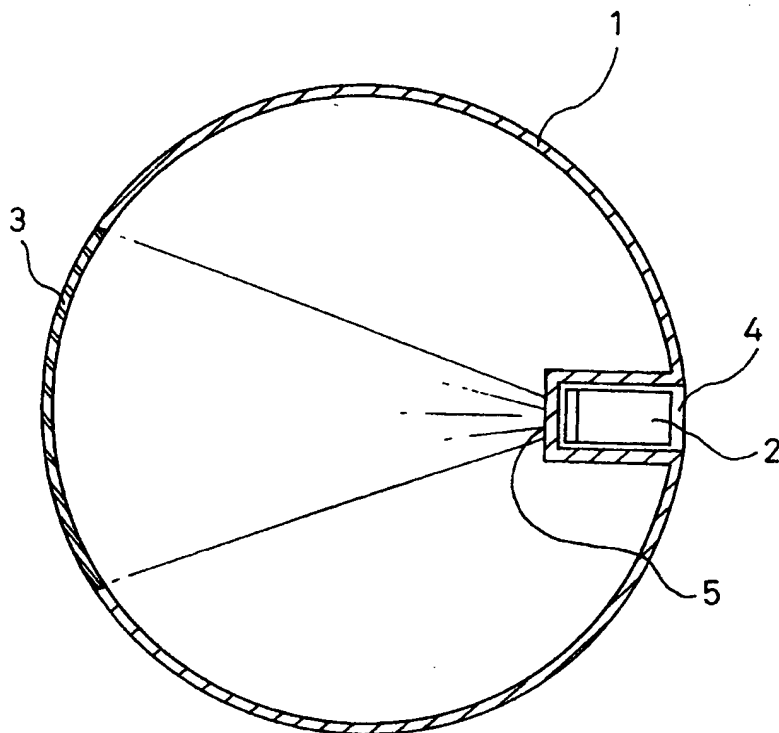


FIG. 2

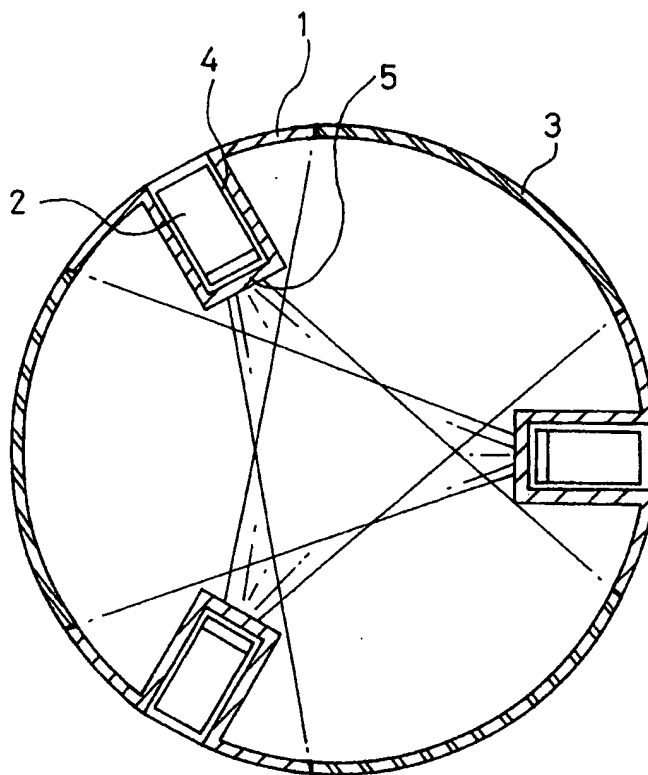
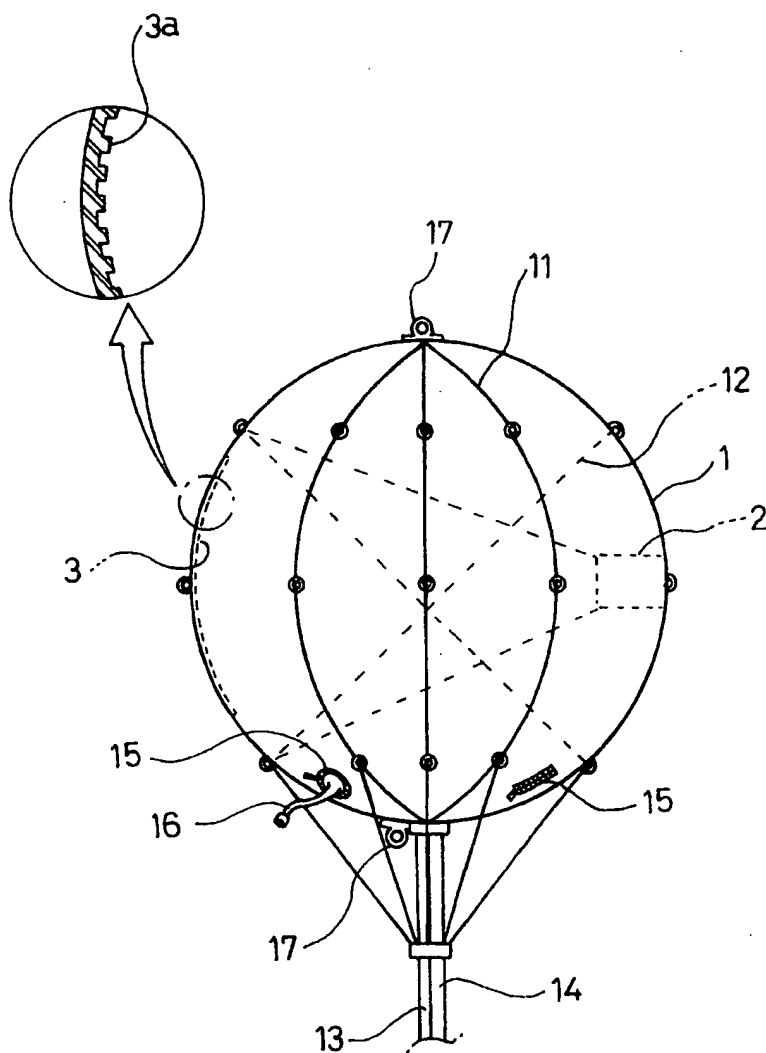


FIG. 3





# INTERNATIONAL SEARCH REPORT

International application No.  
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC <sup>6</sup> : G 09 F 21/06; G 09 F 19/18		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
IPC <sup>6</sup> : G 09 F 19/00, 21/00; G 03 B 21/00		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
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<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 4 597 633 A (FUSSELL), 01 July 1986 (01.07.86), fig.1,2; column 2, line 56 - column 3, line 21; column 4, lines 11-25; column 4, lines 45-56; claim 1.	1 2
A	US 2 592 444 A (MATALENA), 08 April 1952 (08.04.52), fig.1-3; column 3, lines 3-20; column 4, lines 16-25; claims 1,3,6.	1
A	Patent Abstracts of Japan, Vol.97, No.3, 31 March 1997 (31.03.97) & JP 08-314 401 A (SONY CORP.), 29 November 1996 (29.11.96); abstract.	1
A	DE 2 032 555 A (GRAUERT), 30 December 1971 (30.12.71), fig; page 1, paragraph 2; page 1, paragraph 5 - page 2, paragraph 1; claims 1,2.	1
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<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search		Date of mailing of the international search report
23 September 1999 (23.09.99)		07 October 1999 (07.10.99)
Name and mailing address of the ISA/AT Austrian Patent Office Kohlmarkt 8-10; A-1014 Vienna Facsimile No. 1/53424/200		Authorized officer  Wenninger  Telephone No. 1/53424/325

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Information on patent family members

International application No.

PCT/KR 99/00188

In Recherchenbericht angeführtes Patentdokument Patent document cited in search report Document de brevet cité dans le rapport de recherche		Datum der Veröffentlichung Publication Date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
US A	4597633	01-07-1986	keine - none - rien	
US A	2592444		keine - none - rien	
JF A2	B314401	29-11-1996	keine - none - rien	
DE A	2032555	30-12-1971	keine - none - rien	

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